

CLAIM AMENDMENTS

1. (currently amended): A method for determining an endpoint of a cleaning process running in a chamber that comprises steps of:

directing radiation ~~absorbed by~~ having wavelengths overlapping an absorption band of a byproduct of the cleaning process into an exhaust line of the chamber;

receiving radiation from the exhaust line;

filtering the radiation received from the exhaust line through a first filter that transmits radiation at said absorption band of said byproduct;

filtering the radiation received from the exhaust line through a second filter that transmits radiation in a band of wavelengths different from said absorption band of said byproduct;

~~detecting~~ determining a measure of absorbance of the radiation by the byproduct by subtracting the radiation filtered through the second filter from the radiation filtered through the first filter;

amplifying said measure of absorbance to provide a voltage signal; and

determining the endpoint when the voltage signal reaches a predetermined voltage level

~~measure of absorbance falls within a predetermined window.~~

2. (canceled)

3. (currently amended): The method of claim ~~1~~ 2 wherein the cleaning process is a dark cleaning process and the step of directing comprises directing infrared radiation.

4. (currently amended): The method of claim ~~1~~ 3 wherein the step of detecting comprises detecting further radiation emitted by the byproduct after absorbing the radiation.

5. (currently amended): The method of claim 1 4 wherein the step of detecting further comprises analyzing the further radiation using Fourier Transform Raman spectrometry.

6. (currently amended): The method of claim 1 5 wherein the step of detecting further comprises generating an output signal representative of the measure.

7-8. (canceled)

9. (currently amended): The method of claim 1 7 wherein the step of determining the endpoint when the output signal falls within the predetermined window comprises determining when the output signal falls below a predetermined level.

10. (currently amended): The method of claim 1 9 wherein the byproduct is SiF_4 .

11. (currently amended): An apparatus for determining an endpoint of a cleaning process running in a chamber that comprises:

a radiation source that transmits radiation ~~absorbed by~~ having wavelengths overlapping an absorption band of a byproduct of the cleaning process into an exhaust line of the chamber;

a first filter positioned to receive radiation from the exhaust line, wherein the first filter transmits radiation at said absorption band of said byproduct;

a second filter positioned to receive radiation from the exhaust line, wherein the second filter transmits radiation in a band of wavelengths different from said absorption band of said byproduct;

a detector that ~~detects~~ outputs a signal representing the radiation transmitted through the first filter minus the radiation transmitted through the second filter ~~further radiation emitted by the byproduct and a measure of background radiation;~~

an analyzer that analyzes the further radiation and the measure to determine a measure of

13 ~~absorbance of the radiation by the byproduct; and~~
14 a controller, connected to receive the signal outputted by the detector, that generates an
15 endpoint signal when the signal outputted by the detector reaches a predetermined voltage level
16 ~~measure of absorbance reaches a predetermined window.~~

12. (canceled)

13. (currently amended): The apparatus of claim 11 ~~12~~ wherein the cleaning process is a dark cleaning process and the radiation source comprises a source of infrared radiation.

14–17. (canceled)

18. (currently amended): The apparatus of claim 11 ~~17~~ wherein the controller generates the endpoint signal when the output signal falls below a predetermined level.

19. (currently amended): The apparatus of claim 11 ~~18~~ wherein the byproduct is SiF_4 .